

Supreme Court of the United States.

OCTOBER TERM, 1901.

THE UNITED STATES, APPELLANT,

v.

THE RIO GRANDE DAM AND IRRIGATION COMPANY ET AL.

} No. 239.

BRIEF FOR APPELLEES.

Statement.

The court is somewhat familiar with the facts of this case. It was here on a former appeal and argued in November of the 1898 term. The decision was rendered May 22, 1899, 174 U. S. 690, L. ed. 43, 1136. The facts appearing upon the record at that time are duly set out by Mr. Justice Brewer in connection with the opinion of the court. The case, which had been decided in favor of the defendant companies, was reversed, and sent back with an order to the trial court to inquire "into the question whether the intended acts of the defendants in the construction of a dam and in appropriating the waters of the Rio Grande will substantially diminish the navigability of that stream within the limits of its present navi-

gability; and, if so, to enter a decree restraining those acts to the extent that they will so diminish."

In pursuance of that order the case was tried in the District Court of the Third Judicial District of the Territory of New Mexico, beginning on the 12th of December, 1899, and ending on the 21st, occupying nine full days.

Thirty-three witnesses were examined, and this court is now confronted with a record of 652 pages. Unfortunately all the exhibits used before the court, and made part of the evidence in the case, were omitted by the clerk of the Supreme Court of the Territory in forwarding the transcript. Otherwise the record would not have been so small. Counsel have now done what they could to correct this by stipulating an Appendix of 185 pages and 9 maps.

On January 2, 1900, the District Judge filed his findings of fact, thirty in all, and directed by decree that the bill of complaint should be dismissed. From this action the appellant took an appeal to the Supreme Court of the Territory, which unanimously affirmed the District Court, August 24, 1900. From the last decision the case has now been brought here on appeal.

The decision of this court, and the resulting mandate, fixed the exact limits for the new trial. The order was to find the single ultimate fact, whether or not the proposed dam of the defendants would, if constructed, substantially diminish the navigability of the river within its present limits of navigability. This fact the court found in the negative.

No exceptions to the rulings of the court on the admissibility or rejection of evidence were saved by either party. There is no bill of exceptions. The case is here upon thirty findings of fact, including the ultimate fact, which the mandate ordered to be found. There are

special assignments of error to eight of these findings, including a charge of error in the ultimate finding.

There are five other assignments of error, which are numbered 10, 11, 12, 13, and 14. Number 10 simply asserts that none of the facts found by the court are sustained by the evidence. The 11th, 12th, and 13th assignments relate to the application made by plaintiff for a rehearing. The 14th and last assignment of error relates to the refusal of the court to make findings of fact as to the effect on the navigability of the stream by the use of the waters in the State of Colorado for irrigation purposes.

The findings of fact are found in the record on pages 12 to 21. For convenience we give them here in full.

FINDINGS OF FACT.

From the evidence in this case, the court makes the following findings of facts:

I.

The Rio Grande is navigable only between the American points of Rio Grande City and the mouth of such river, a distance of 262 miles, measured by the sinuosities of the stream. It is navigable (navigated?) only between Rio Grande City and Brownsville, Texas, a distance of 177 miles by such sinuosities.

II.

That such navigation began to decline on account of scarcity of water in such river in 1888, and has continued to so decline until at the present time the same consists of occasional trips of one small vessel of about 100 tons

capacity. Such trips are irregular and uncertain, and so spasmodic as to time as to render such navigation of small benefit to commerce between points reached thereby.

III.

That the decline of such navigation has been occasioned by a gradual decline of the navigable capacity of such river, and the increased difficulty in navigating the same on account of scarcity of water, compelling the substitution from time to time of boats of less capacity.

IV.

The scarcity of water in said river when (where?) it is navigable, is due largely to a drouth of great severity, which has continued with only occasional interruptions since about 1887, and has extended over a vast area of country several hundred miles in width and length along the general course of said river from its mouth up, and which has both affected portions of Texas and Mexico, and to the drying up of the following-named tributaries of such river, lying either in Texas or Mexico, to wit: Elm Creek, Los Moras, Piedras Pintas, Sycamore, San Felipe, Escondido, San Diego, Las Bacas, Trientauno, Santa Carlo, Cienegas, and Salado, all referred to in the report of Major Emory, as well as described by the witnesses in this case, and all of which were from ten to eighteen years ago bold running streams.

V.

There is no evidence from which the court can estimate the extent of the diminution of such rainfall, or from

which it can determine that there has been any permanent change in the amount of rainfall in said region, or the amount of such effect of such diminution in rainfall and drying up of streams, has had upon the navigable capacity of said river since the commencement of this suit in May, 1897.

VI.

At the measuring station, at San Marcial, forty miles above Elephant Butte, the Rio Grande is shown, from evidence and measurements filed in this case, to be largely a torrential stream, varying from dry bed to floods of considerable size and duration, and this torrential flow characterizes its entire course through New Mexico.

VII.

In its course, both in Colorado and New Mexico, a large percentage of its waters are constantly lost by causes not accurately determined, but generally classed as seepage and evaporation, and between San Marcial, New Mexico, and El Paso, Texas, a distance of 300 miles measured by the sinuosities of the river, it is shown that the percentage of loss from such causes is about one-third of the entire volume of such water, and at various other points in New Mexico such losses, more or less equal in percentage, are also shown to occur.

VIII.

While there are no measurements from which the percentage of loss by evaporation from the volume of water after the same passes El Paso, Texas, can be definitely determined, yet the general character of the bed, banks,

formation, and soil, is shown to be the same general character as that portion of such stream lying between San Marcial and El Paso, where such large losses in volume have been accurately determined, and that for a distance of 400 miles below El Paso, Texas, measured by the sinuosities of the river, to Presidio del Norte, such seepage and evaporation continues to diminish the volume of such water.

IX.

Between Elephant Butte, the point where defendants propose to divert the waters of such stream, and Presidio del Norte, a distance of 640 miles, by the sinuosities of the stream, there are no living tributaries to said Rio Grande, and the waters of such stream are not reinforced substantially between such points by any regular flow or tributary, and there is no perennial flow of the Rio Grande at Presidio del Norte.

X.

The first perennial tributary of the Rio Grande below Elephant Butte, is the Conchos, which comes into the Rio Grande at Presidio del Norte. The Conchos is a perennial stream rising in the mountains of Northern Mexico, and flowing several hundred miles northerly into the Rio Grande. In season it is a torrential stream of great magnitude, and at all times carries a considerable quantity of water. A cross-section of the Rio Grande, near and just below where the Conchos joins it, shows an area at least twenty-five times as great as the area of a cross-section of the Rio Grande just above the mouth of the Conchos, measured to the highest water-mark known, so far as disclosed by the evidence, in thirty-three years, the carrying capacity of the lower cross-section being

variously estimated at from sixteen to twenty-five times as great as the upper cross-section.

XI.

It has only been shown by the evidence that the waters in the Rio Graude bed passed Presidio del Norte, the mouth of the Conchos, in considerable quantities upon one occasion—that is, during the month of May, 1897; but it is fairly inferable from the testimony that such waters have so passed such point on other occasions, in such quantities. No evidence has been offered as to the amount then so passing the mouth of the Conchos, in the Rio Grande bed, except that of one witness to the effect that the height of the same, over a ford some distance below the mouth of the Conchos (the dimensions of the river at that point not being shown) was increased about three feet, and the duration of its passage at such height was for about eight or ten days, and except some estimates, based upon the surface area of the cross-sections referred to, showing the flow to be 3,250 cubic feet per second. And I find that the evidence fails to show that at the period mentioned, the waters so flowing by the mouth of the Conchos affected the height of the river at Laredo, Texas, to any cosiderable extent.

XII.

It appears from the evidence, that the Rio Grande was navigated in a common row-boat, drawing about six inches of water, during the winter season of 1893-1894, from El Paso, Texas, to the mouth of the Conchos, a distance estimated at 400 miles by the sinuosities of the stream, at a stage of water from 3 to $3\frac{1}{2}$ feet deep at El Paso,

Texas, at the time of starting, said trip occupying twenty-one days, and without finding any obstructions in said stream, except scarcity of water for the last forty miles above the mouth of the Conchos.

That after remaining a period of eighteen days in the vicinity of Presidio del Norte, the party making said trip embarked upon water said to have been furnished from the Rio Conchos, and continued to Del Rio, Texas, a distance of 562 miles by the sinuosities of the stream.

XIII.

There is no evidence in the case tending to show that there is any obstruction to the free and uninterrupted flow of the Rio Grande from Del Rio, Texas, to Rio Grande City, Texas.

XIV.

There is no evidence in the case tending to show that water which has reached Del Rio, Texas, would not uninterruptedly continue to flow to Rio Grande City, Texas, except such portions thereof as may be lost by seepage or evaporation.

XV.

The Conchos river enters the Rio Grande from the Mexican side at nearly right angles. On the lower or southerly side of the Conchos there is elevated ground, upon which is situated the village of Presidio del Norte. On the upper or northerly side of the Conchos, and on the westerly or Mexican bank of the Rio Grande, the land is low and subject to much overflow. On the American side of the Rio Grande, at the mouth of the Conchos, the banks are high and not subject to overflow.

XVI.

The distance by the sinuosities of the river between Presidio del Norte and Rio Grande City is something over 900 miles, and the bed of the stream between such points appears to be practically a succession of basins or valleys of greater or less extent, and of the same character, and affording the same facilities for absorbing the water as the valleys above El Paso, or those above the mouth of the Conchos, and I find that large amounts of water flowing between the Conchos and Rio Grande City are lost between said points by evaporation and seepage.

XVII.

The character of the formation in the basins or valleys of the Rio Grande, at the only point where the same has been sounded to any great depth—that is, by the Boundary Commission at El Paso, Texas—show the depth of sand and gravel to be at least sixty feet, and I can see no reason why the other valleys and basins along the course of the Rio Grande should not show the same formation to at least the same depth, the surface indications and appearance being substantially the same throughout its length.

XVIII.

The water shed of the Rio Grande and its tributaries above Elephant Butte is approximately 25,000 square miles in extent. The water shed between Elephant Butte and El Paso is approximately 5,700 square miles. The water shed from Elephant Butte to Rio Grande City, of the Rio Grande and its tributaries, after deducting the area of such basins as may not find an outlet into the

stream, is approximately 170,000 square miles. The source of supply of the water flowing past Rio Grande City at the head of navigation is largely this comparatively enormous water shed of 170,000 square miles below Elephant Butte, feeding with tropical rains the Conchos and San Juan particularly, rising far south in the mountains of Mexico and flowing north into the Rio Grande, and also affording a supply for the Pecos, Devil's River, the Good Enough and other perennial streams, as well as the decreased but still flowing waters of the San Felipe and Salado, and at times filling with floods the now dry beds of the former perennial streams heretofore referred to, as well as many smaller streams not named.

XIX.

Records have been kept of the flow of the water passing El Paso, Texas, for the part of the year 1889, and for the years 1890, 1891, 1892, part of 1893, 1897, 1898, and part of 1899. No records were kept for any other years. These records so kept show the amount of water passing El Paso, for said years respectively, to be as follows, viz:

From May 1st, to December 31st, 1889.	370,000	acre feet
1890	971,000	"
1891	1,943,000	"
1892	941,000	"
January 1st, to July 1st, 1893.....	329,000	"
1897	1,369,000	"
1898	689,000	"
From January 1st, to September 30th,		
1899	70,000	"

The river, after having been dry, commenced to run about December 10, 1899.

XX.

The evidence shows that certain cross sections were taken by a member of the International (Water) Boundary Commission, at a certain point one mile below Rio Grande City, Texas, which indicates the amount of water required to raise the river at that point, as appears from the following table :

Estimated flow of Rio Grande one mile below Rio Grande City, Texas ; conditions assumed ; river at low water ; sudden rise comes, rising one foot in four hours at first, and going up to high water.

Stage of river.	Cross sec. sq. ft.	Fall.	Current.	Flow sec. ft.	Add % for possible scour.	Max. flow sec. ft.	Added water for rise.
Low water.....	1226	1:7000	1.63 ft. sec.	1998		1998	343 S. F.
1 ft. rise.....	1591	1:6950	1.90 "	3023	1%	3053	1398 "
2 ".....	1971	1:6900	2.14 "	4218	2 1/2%	4302	2647 "
3 ".....	2363	1:6850	2.40 "	5671	3 "	5841	4186 "
4 ".....	2765	1:6800	2.64 "	7300	4 "	7592	5937 "
5 ".....	3167	1:6750	2.88 "	9121	5 "	9597	7922 "
6 ".....	3594	1:6700	3.12 "	11213	6 "	11886	10231 "
7 ".....	4018	1:6650	3.33 "	13380	7 "	14316	12651 "
8 ".....	4448	1:6600	3.52 "	15657	8 "	16909	15254 "
9 ".....	4883	1:6550	3.73 "	18114	9 "	19853	18198 "
10 ".....	5324	1:6500	3.92 "	20770	10 "	22557	21303 "
11 ".....	5770	1:6500	4.10 "	24675	10 "	26023	24367 "
12 ".....	6222	1:6100	4.24 "	26381	10 "	28019	27364 "
13 ".....	6678	1:6700	4.39 "	29316	10 "	32218	30593 "
14 ".....	7139	1:6900	4.53 "	32340	10 "	35574	33919 "
15 ".....	7604	1:6900	4.66 "	35435	10 "	38978	37323 "
16.1 ft. H. W.....	8123	1:7000	4.80 "	38990	10 "	42589	41234 "

After passing 11 feet this does not show all of the flood flow, as water would begin at this height to leave river above cross-section.

Stage of river	Cross sec. sq. ft.	Fall.	Current.	Flow sec. ft.
Flow at low water, no rise.....	1226	1:10000	1.35 ft. sec.	1655
Flow December, 1897, 2.1 ft. up.....	20.9	1:10000	1.84 "	3697

XXI.

The evidence shows that a cross-section was also taken twenty-one miles (by river) above Brownsville, Texas, and shows the capacity of the river at said point to be as follows:

Estimated flow of Rio Grande, 21 miles (by river) above Brownsville, Texas; conditions assumed; river at low water; sudden rise comes, rising one foot in four hours at first, and going up to high water.

State of river.	Cross sec. sq. ft.	Fall.	Current.	Flow sec. ft.	Add % for possible occur.	Max flow sec. ft.	Added water for rise.
Low water.....	1198	1:6300	1.60 ft. sec.	1917	—	1917	336 S. F.
1 ft. rise.....	1588	1:6200	1.92 "	3045	1%	3079	1498 "
2 "	1989	1:6100	2.24 "	4455	2%	4544	2963 "
3 "	2396	1:6000	2.55 "	6110	4%	6354	4773 "
4 "	2808	1:5900	2.84 "	7975	5%	8373	6792 "
5 "	3223	1:5800	3.11 "	10023	7%	10724	9143 "
6 "	3641	1:5800	3.37 "	12270	8%	13252	11671 "
7 "	4062	1:5750	3.60 "	14623	9%	15939	14368 "
8 "	4485	1:5700	3.82 "	17133	10%	18846	17265 "
9 "	4913	1:5700	4.03 "	19800	10%	21780	20199 "
10 "	5344	1:5900	4.17 "	22284	10%	24512	22931 "
11 "	5777	1:6100	4.28 "	24725	10%	27197	25616 "
12.1 ft. H. W.....	6257	1:6300	4.42 "	27056	10%	30421	28840 "

After passing 8 ft. or 9 ft. this does not show all of flood flow, as water would begin at this height to leave river channel above across-section.

State of river.	Cross sec. sq. ft.	Fall.	Current.	Flow sec. ft.
Flow at low water, no rise.....	1198	1:9000	1.32 ft. sec.	1581
Flow March 24, 1898, 1.3 ft. up.....	1700	1:9000	1.66 "	2822

XXII.

The testimony in the case shows the following table of distances, viz :

Distances from Rio Grande, scaled from Map.

From	To	Distance by channel.	Distance along axis.
Headwaters.....	Del Norte.....	—	80 miles.
Del Norte.....	Colorado State Line.....	—	65 "
State Line.....	Embudo	—	65 "
Embudo	White Rock Cañon.....	—	30 "
White Rock Cañon.	(Length).....	—	15 "
White Rock Cañon.	Albuquerque	—	50 "
Albuquerque.....	San Marcial.....	—	105 "
San Marcial.....	Elephant Butte.....	—	40 "
Elephant Butte.....	Fort Seldon.....	—	65 "
Fort Seldon.....	El Paso.....	—	60 "
El Paso.....	Lower end El Paso Valley.	—	80 "
Lower End Valley..	Mouth of Conchos River..	—	125 "
Mouth of Conchos..	Mouth of Pecos.....	—	250 "
Mouth Pecos.....	Mouth Devil's River ..	—	35 "
Mouth Devil's River.	Eagle Pass.....	—	65 "
Eagle Pass.....	Laredo.....	—	110 "
Laredo.....	Mouth Salado River.....	70 miles.	55 "
Mouth Salado.....	Mouth Alamo.....	50 "	35 "
Alamo.....	Roma	8 "	5 "
Roma.....	Mouth San Juan.....	12 "	10 "
Mouth San Juan....	Rio Grande City.....	2 "	2 "
Rio Grande City....	Brownsville.....	177 "	95 "
Brownsville.....	Mouth Rio Grande	85 "	30 "

XXIII.

The proposed dam and reservoir of the defendants would contain 11,036,722,000 cubic feet of water, or 253,370 acre feet of water.

XXIV.

The defendants propose to irrigate 230,000 acres of valley, and 300,000 acres of mesa lands, in all 530,000

acres. In accordance with the amount of water used in Colorado and New Mexico for irrigating land, it will require 954,000 acre feet of water to irrigate that quantity of land proposed to be irrigated by defendants, or from three to four times the capacity of said reservoir.

XXV.

The testimony shows the following to be the time it would have taken all the flow of the Rio Grande to have filled the Elephant Butte reservoir, supposing it to hold 253,000 acre feet during the maximum flow in each year, from El Paso guaging station, viz:

1889. All of May flow and 8 or 10 days of June flow.....	40 days.
1890. From May 15th to June 3d.....	19 "
1891. From May 12th to May 20th.....	9 "
1892. From May 2d to May 17th.....	16 "
1893. From April 25th to May 31st.....	37 "
1897. From May 24th to June 3d.....	11 "
1898. Two floods, April 22d to May 8th, and July 17th to July 25th.....	26 "
1899. No flood. Total flow for year only 70,000 acre feet at El Paso.	

XXVI.

The testimony shows the time necessary each year to fill the proposed Elephant Butte reservoir of the defendants, supposing it to hold 253,000 acre feet, and starting at the beginning of spring flood and allowing enough water to pass proposed dam to supply all ditches below it (assuming this amount to be 500 second feet for the El Paso Valley), would be as follows, viz:

1889. From record of El Paso gauging station, all surplus flow above 500 second feet, from May 1st to June 15th.....	46 days
1890. Same condition, from April 17th to May 19th	33 "
1891. Same condition, from April 12th to May 3d.....	22 "
1892. Same condition, from April 15th to May 7th	23 "
1893. All surplus flow above 500 second feet at El Paso gauging station, for irrigation season, would lack 11,000 acre feet of filling reservoir.	
1897. From record of El Paso gauging station, all surplus flow above 500 second feet, from April 13th to May 11th.....	29 "
1898. Same condition, from April 17th to June 20th.....	65 "
1899. During whole season only 6,500 acre feet passed El Paso gauging station above the 500 second feet.	

XXVII.

That the evidence shows that cross-sections of the Rio Grande were taken by a member of the Boundary Commission to the extent of three or four per mile for the entire distance from Rio Grande City to Brownsville, Texas, and that the two cross-sections hereinbefore referred to were a fair indication of the contour of the Rio Grande between those points.

XXVIII.

In attempting to arrive at a conclusion in this case, I have made some computations based partially upon known data, and partially upon probabilities arising from the

evidence. In such computation I have assumed the following conditions:

1. It appears by comparison of the tables of measurements at the guaging stations of San Marcial and El Paso that there is no material flattening or tailing out of the floods in the Rio Grande. If this remains true throughout the entire course of the river, a body of water passing El Paso would reach Rio Grande City, if at all, in practically the same form as to length and height as at El Paso, less losses between those points.

2. It seems probable from the conditions of the bed and banks of the stream, and the climate of the country through which it passes, that any flow of less than 2,000 second feet at El Paso, or 3,000 second feet at San Marcial, cannot possibly have any effect on the river at the head of navigation. It also seems probable that only such flows as are above this amount, and are sustained for a considerable period, could reach the head of navigation in substantial quantities.

3. It seems probable that loss by seepage and evaporation will be as great between El Paso and Presidio del Norte as between San Marcial and El Paso; the loss may be greater owing to greater distance.

4. From Presidio to Rio Grande City, flood waters from El Paso would encounter in the bed the perennial waters known to exist there. To what extent they furnish a water table for these flood waters to travel upon is unknown, but I have assumed it in this computation that losses by seepage and evaporation are thereby lessened and have taken an arbitrary twenty per cent. as representing the probable loss from such causes.

5. It seems probable that a flood passing El Paso would reach Rio Grande City, if at all, in from fifteen to twenty-five days, assuming the river to have comparatively a uniform fall between those points.

6. It appears from the evidence that a rise of two feet above low water between Rio Grande City and Brownsville is necessary to make navigation practicable, and these waters usually flowing down to that point, if at all, at a season when other supplies are low, I assume a rise of two feet to be necessary to be of any substantial benefit to navigation.

7. Assuming these conditions, I have prepared the following table:

			If 45% is lost between El Paso and Presidio del Norte, and 20% between Presidio and Rio Grande City, this would raise river at Rio Grande City the following amounts above low water for time flood was passing El Paso.
Year.	Duration of flood over 2,000 sec. ft. days (at El Paso).	Acre feet passing El Paso during time of flood.	
1890.....	April 7) to July 3) 76 days. April 12)	733,570	489,050 2.0 ft. for 75 days.
1891.....	to 94 " July 14)	1,464,210	976,140 3.0 " 94 " 2.5 " 94 "
1892.....	April 15) to 68 " June 21)	770,300	513,600 2.2 " 68 " 1.9 " 68 "
1893.....	April 29) to 31 " May 29)	239,500	159,700 1.5 " 32 " 1.3 " 32 "
1894.....	No record, but was as dry as 1893, and possibly drier. April 12)	634,700 at San Marcial.	
San Marcial..	to 72 days. June 10) April 13)	423,100 at San Marcial. 236,200 at San Marcial.	289,100 1.2 " 72 " 0.9 " 72 "
1895.....	April 21)	33 1/3 per cent. off. 157,500 at El Paso.	
1897.....	to 75 " July 4) April 20)	983,200 655,500	75 " 2.1 " 75 "
1898.....	to 24 " May 13) No flood.	186,400 124,100	24 " 1.3 " 24 "
1899.....			

Assuming the loss from seepage and evaporation between El Paso and Presidio del Norte to be forty-five per cent. instead of thirty-three and a third (which would be at the same rate of loss per mile as is shown to occur between San Marcial and El Paso), the result, assuming all other conditions to be as hereinbefore stated, would be as shown in the last column of the foregoing table.

It will be observed that the above results show a contribution from floods passing El Paso to the navigable capacity at Rio Grande City to the extent of a rise of two feet during four of the ten years mentioned, when thirty-three and a third per cent. is deducted for loss between El Paso and Presidio, and during three years out of the ten years, counting 1892, when forty-five per cent. is deducted between the same points. It is to be further observed that no account is taken in above computations for variations in the height of floods at El Paso, but the results simply show the average height a given amount of water passing El Paso, less deductions for probable loss, would raise the river at Rio Grande City for the same number of days it was passing El Paso. If these variations continue from El Paso to Rio Grande City the beneficial effect on navigability would be lessened owing to corresponding irregularity in the height of the rise at the latter point.

How reliable such results may be cannot be determined from the evidence. Whether the loss is less or greater between the points named is unknown. There is some evidence in the case tending to disprove the correctness of such results; for example, the testimony of Daly to the effect that 1897 flood only lasted eight or ten days at Presidio del Norte, and the testimony of Turpin that the same flood made no appreciable change in the river at Laredo, and the affidavit of Kelly to the effect that they

have had no floods from the upper Rio Grande in recent years. On the whole, I am unable to say to how much credit the results of such computations are entitled in arriving at the ultimate fact in question in this case.

XXIX.

There is no direct testimony in this case showing that any given quantity of water in the Rio Grande passing El Paso reaches Rio Grande City, the head of navigation, and there accomplishes any certain effect upon the navigability of the stream.

XXX.

That the waters of the Rio Grande passing El Paso occasionally in seasons of high and protracted floods reach Rio Grande City, the head of navigation, in considerable quantities seems probable; but that they reach that point in quantities sufficient and in such form as to substantially add to the navigable capacity of the stream is not satisfactorily established by the evidence, nor can such a conclusion be satisfactorily deduced therefrom. I therefore find that the intended acts of the defendants in the construction of a dam or dams, or reservoir, and in appropriating the waters of the Rio Grande, will not substantially diminish the navigability of that stream within the limits of the present navigability.

Let a decree be prepared and entered dismissing the bill of complaint herein.

The assignments of error are found on pages 632 to 636, and are as follows:

I.

The Supreme Court of the Territory erred in not sustaining the first assignment of error, and reversing the

decree of the district court on account of the error thereby assigned, which assignment of error is as follows, to wit:

"The court erred in its 7th finding of fact to the effect that between San Marcial and El Paso, a distance of 300 miles, measured by the sinuosities of the river, the percentage of loss is about one-third of the entire volume of such water, and at various other points in New Mexico such losses, more or less equal in percentage, are also shown to occur. The evidence in this case failed to show that any such loss occurred between San Marcial and El Paso in any year except that of 1897, and there being no evidence upon which to predicate the general conclusion drawn by the court by its finding."

II.

The Supreme Court of the Territory erred in not sustaining the second assignment of error and reversing the decree of the district court on account of the error thereby assigned, which assignment of error is as follows, to wit:

"The court erred in its 8th finding of fact, there being no evidence upon which to base the general and particular conclusions contained therein."

III.

The Supreme Court of the Territory erred in not sustaining the 3d assignment of error, and reversing the decree of the district court on account of the error thereby assigned, which assignment of error is as follows, to wit:

"The court erred in its 9th finding of fact, there being no evidence upon which to base the general and particular conclusions contained therein."

IV.

The Supreme Court of the Territory erred in not sustaining the 4th assignment of error, and reversing the decree of the district court on account of the error thereby assigned, which assignment of error is as follows, to wit:

"The court erred in its 10th finding of fact to the effect that the Rio Conchos is a perennial stream, and at all times contributes a considerable quantity of water to the Rio Grande, such finding not being sustained by any evidence in the case, and the rest of the finding being a mere statement of a probative and not an ultimate fact."

V.

The Supreme Court of the Territory erred in not sustaining the 5th assignment of error, and reversing the decree of the district court on account of the error thereby assigned, which assignment of error is as follows, to wit:

"The court erred in its 11th finding of fact, to the effect that the evidence fails to show that at the period mentioned therein the waters flowing by the mouth of the Conchos affected the height of the river at Laredo, Texas, to any considerable extent; said conclusions being uncertain, ambiguous, and misleading, incomplete and contrary to the evidence in the case, and is wholly immaterial, and because the particular facts found do not justify the general conclusion stated therein."

VI.

The Supreme Court of the Territory erred in not sustaining the sixth assignment of error, and reversing the decree of the district court on account of the error thereby assigned, which assignment of error is as follows, to wit:

"The court erred in its 17th finding of fact. The same is not based upon any evidence in the case, and is misleading, ambiguous, and the mere expression of opinion. If the conclusion reached by said finding is based upon any evidence at all, it is upon the absence of evidence, and while affirmative in form, it is a negative conclusion, and furnishes neither in whole or in part any basis for the decree and finding dismissing the bill in said cause."

VII.

The Supreme Court of the Territory erred in not sustaining the seventh assignment of error, and reversing the decree of the district court on account of the error thereby assigned, which assignment of error is as follows, to wit:

"The court erred in its 28th finding of fact.

"(a) The first paragraph of said finding is based upon the measurement of one flood flow in the year 1897, and that only between San Marcial and El Paso, and therefore is not a reasonable deduction from the evidence in the case.

"(b) Because the second paragraph of said finding of fact 28th is not a finding of fact drawn from the evidence in the case, but is purely the result of speculation and not a fair deduction from the evidence.

"(c) Because the third paragraph of said finding of fact 28th is not a finding of fact drawn from the evidence in the case, but is purely the result of speculation and not a fair deduction from the evidence.

"(d) Because in the fourth paragraph of said finding of fact 28th, the court is not justified in assuming an arbitrary percentage of loss by evaporation and seepage between Presidio del Norte and Rio Grande City, Texas, but such assumption must be based upon evidence in the case, and there is no evidence in the case from which such arbitrary percentage of loss can be determined.

"(e) Because the assumptions and presumptions con-

tained in paragraphs one to six of said finding 28th are not based upon or sustained by any evidence in the case.

"(f) Because the table (page 13 $\frac{1}{2}$ of said findings of fact), made a part of said finding 28th, is based upon the assumptions, presumptions, and speculative conclusions contained in the preceding six paragraphs of said finding 28th, and said assumptions cannot be made the bases of a conclusion by the court, not (nor?) said table, said assumptions being wholly unwarranted by any evidence in the case.

"(g) The appellant assigns as error the remainder of said finding of fact 28th, explanatory to said statement, as being merely a theoretical and speculative discussion of the conditions of the river, and probable results which might flow from given conditions, not based on any evidence in the case, and because said finding is not properly a finding of fact, but a mere speculative opinion or theory."

VIII.

The Supreme Court of the Territory erred in not sustaining the 8th assignment of error, and reversing the decree of the district court on account of the error thereby assigned, which assignment of error is as follows, to wit:

"The court erred in the 30th finding of fact, because it is based upon statements of facts not sustained by the evidence, and

"(2) The court erred in said statement of fact in this, that the statement of facts contained in said finding does not justify the court in finding as a matter of fact, and concluding therefrom that the amount of water proposed to be appropriated and impounded at Elephant Butte by the defendant will not substantially diminish the navigable capacity of the Rio Grande within the present limits of navigability."

IX.

The Supreme Court of the Territory erred in not sustaining the 9th assignment of error, and reversing the decree of the district court on account of the error thereby assigned, which assignment is as follows, to wit :

"The court erred in finding as a matter of law that the plaintiff's bill should be dismissed."

X.

The Supreme Court of the Territory erred in not sustaining the 10th assignment of error, and reversing the decree of the district court on account of the error thereby assigned, which assignment of error is as follows, to wit :

"The court erred in this, that none of the facts found by the court are sustained by the evidence in the case."

XI.

The Supreme Court of the Territory erred in not sustaining the 11th assignment of error and reversing the decree of the district court on account of the error thereby assigned, which assignment of error is as follows, to wit :

"The court erred in refusing to reopen the case upon the application of the plaintiff, and to permit the plaintiff to obtain additional evidence to establish facts which the court itself found not to have been established, and without which no proper determination of the issues could be had, and the absence of such evidence and the possibility of procuring the same not having been apparent until the trial of the case."

XII.

The Supreme Court of the Territory erred in not sustaining the 12th assignment of error and reversing the decree of the district court on account of the error thereby assigned, which assignment of error is as follows, to wit :

"The court erred in refusing to grant a rehearing of said case upon the offer of newly discovered evidence in said cause."

XIII.

The Supreme Court of the Territory erred in not sustaining the 13th assignment of error, and reversing the decree of the district court on account of the error thereby assigned, which assignment of error is as follows, to wit :

"The court erred in refusing to grant a rehearing of said case upon the offer of plaintiff to procure the evidence mentioned in assignment of error XI, together with the newly discovered evidence presented to the court by the affidavit of the proposed witness, Clark, and others, it being certain that the investigation which the plaintiff offered to have made, together with the newly discovered evidence might, and probably would, change the result of the determination of the court as to the facts in the case."

XIV.

The Supreme Court of the Territory erred in not sustaining the 14th assignment of error, and reversing the decree of the district court on account of the error thereby assigned, which assignment of error is as follows, to wit :

"The court erred in refusing to make findings of fact asked for by the plaintiff, numbered one (1), two (2), and twenty-one (21)."

XV.

The Supreme Court of the Territory erred in adopting the findings of fact made by the district court.

XVI.

The Supreme Court of the Territory erred in affirming the decree of the district court rendered in said cause.

Wherefore, the appellant prays that the decree of the Supreme court of New Mexico, rendered in said cause, be reversed.

(Signed) W. B. CHILDERS,
*United States Attorney for the
Territory of New Mexico,
and Attorney for Plaintiff.*

M. C. BURCH,
of Counsel.

ARGUMENT.

We propose to conduct the argument on our part under the limitations of the rule laid down in *Hathaway v. Cambridge National Bank*, 134 U. S. 494, L. ed. 33, 1004. In that case the court uses the following language: "Error in findings of fact by the court are not subject to revision by the Supreme Court of the United States if there was any evidence upon which findings may be made."

This ruling is reinforced in *San Pedro and Cañon del Agua Co. v. United States*, 146 U. S. 120, L. ed. 36, 911; and in *Zeckendorf v. Johnson*, 123 U. S. 617, L. ed. 31, 277. In the former of these two cases, the court states the rule as follows:

"The authority of the United States Supreme Court on appeal from a territorial court is limited to determining whether the court's findings of fact support its judgment or decree, and whether there is any error in rulings, duly excepted to, on the admission or rejection of evidence, and does not extend to a consideration of the weight of the evidence or its sufficiency to support the conclusions of the court."

Again, this court has said:

"Where a suit in equity was tried by the court of a Territory, without a jury, the Supreme Court of the United States, apart from the exceptions duly taken to rulings on the admission or rejection of evidence, is limited to the inquiry whether the decree can be sustained upon its findings." *Mamouth Min. Co. v. Salt Lake Foundry, etc., Co.*, 151 U. S. 447, L. ed. 38, 229.

The opinion, in stating the case, uses this language :

"The case was tried in one of the district courts of the Territory of Utah, on the equity side, and findings of fact rendered by the court, and a decree entered, based on such facts. The complainant appealed to the Supreme Court of the Territory where errors were assigned as to the sufficiency of the evidence to sustain the special findings, and to the admission of certain evidence and the allowance of certain questions against defendant's objection. The Supreme Court held that the evidence justified the findings, and that there was no error in the ruling in relation to the testimony, and affirmed the decree."

These are practically the facts of the case at bar.

Mr. Chief Justice Fuller, in delivering the opinion of the Court, declares that the proceeding, which was to enforce a mechanic's lien, was in the nature of a suit in equity, and was tried by the court without a jury. He then adds :

"The Supreme Court, in affirming the judgment, has determined that the findings of the trial court were justified by the evidence, and, apart from the exceptions duly taken to rulings on the admission or rejection of evidence, our examination is limited to the inquiry without reference to the weight of the evidence or its sufficiency to support the special findings, whether the decree can be sustained upon those findings."

Citing : Idaho & O. Land Imp. Co. v. Bradbury, 132 U. S. 509, L. ed. 33, 433 ; Stringfellow v. Cain, 98 U. S. 610, L. ed. 25, 421 ; An act of April 7, 1874 (18 Stats. 27).

The Chief Justice adds in emphatic language :

"*Of this there can be no doubt.*"

To the same effect is Young v. Amy, 171 U. S. 179, L. ed. 42, 127, which was also an appeal from a territo-

rial court. Also see *Kerrick v. Hannaman*, 168 U. S. 328, L. ed. 42, 484.

In the case of *Holloway v. Dunham*, decided at the October term, 1897, Justice Peckham, delivering the opinion of the Court, says that "on appeal from the Supreme Court of a Territory we cannot examine the evidence as to its weight or sufficiency, and the findings of fact are conclusive upon this court." He cites *Harrison v. Perea*, 168 U. S. 311, L. ed. 42, 478.

The opinion in the latter case was also delivered by Justice Peckham, wherein he strongly holds to the doctrine that the jurisdiction of the Supreme Court of the United States, on appeal from the Supreme Court of a Territory, is limited to exceptions duly taken to rulings on the admission or rejection of evidence, and determining whether the findings of fact support the judgment, holding hard to the theory that the findings of fact are conclusive. In this connection he cites: *Stringfellow v. Cain, supra*; *Neslin v. Wells*, 104 U. S. 428, L. ed. 26, 802; *Eilers v. Boatman*, 111 U. S. 356, L. ed. 28, 454; *Idaho & Oregon Co. v. Bradbury, supra*; *Mamouth Mining Co v. Salt Lake Foundry & Mach. Co., supra*; *Haws v. Victoria Copper Min. Co*, 108 U. S. 303, L. ed. 40, 436; *Gildersleeve v. New Mexico Min. Co.*, 161 U. S. 573, L. ed. 40, 812; *Bear Lake & River Water Works & Irrigation Co. v. Garland*, 164 U. S., p. 1, L. ed. 41, 327.

In *Young v. Amy, supra*, the same doctrine as to the limitation of the Supreme Court of the United States to the facts found below on appeals from the supreme court of a Territory, is held by Mr. Justice White, speaking for the whole court. The learned Justice says:

"It is settled that on error or appeal to the supreme court of a Territory this Court is without power to

re-examine the facts, and is confined to determining whether the court below erred in the conclusions of law deduced by it upon the facts by it found, and to reviewing error committed as to the admission or rejection of testimony when the action of the court in this regard has been duly excepted to and the right to attack the same preserved on the record."

His only citation being to *Harrison v. Perea, supra.*

SPECIAL ASSIGNMENTS OF ERROR.

It will be seen that there are twenty-two findings to which there are no assignments of error except the general statement of the assignment numbered X; "that none of the facts found by the court are sustained by the evidence in the case." This charge could hardly have been made in earnest, as several of the findings are simply statements of facts agreed upon at the trial, and others are taken bodily from the evidence presented to the court by the plaintiff.

Under the rule governing in appeals of this character, as shown in above citations to decisions of this court, we shall confine ourselves to the examination of the errors charged in the special assignments of error, to findings VII, VIII, IX, X, XI, XVII, XXVIII, and XXX. If we show that there is *some evidence* in the record to sustain each of these findings, we will have no occasion to discuss the weight of evidence as to any one of them.

FINDING VII.

In this the court finds that in Colorado and New Mexico, a large percentage of the waters of the river are constantly lost by causes classed as seepage and evaporation; that between San Marcial and El Paso, a distance of 300

miles by the sinuosity of the stream, such losses amounts to about *one-third* of the entire volume, and at various other points in New Mexico similar losses occur.

The plaintiff in error, in its first assignment, declares this finding to be erroneous on the ground that "the evidence in this case failed to show that any such loss occurred between San Marcial and El Paso in any year except that of 1897, and there being no evidence upon which to predicate the general conclusion drawn by the court by its said finding."

This, it is seen, is clearly an admission that in the year 1897 there was a loss of one-third of the water between San Marcial and El Paso. The pith of the objection is that the court could not conclude from the testimony that that proportion of loss occurred generally.

The most definite testimony on this point is that of Phillip E. Harroun, a witness first called and examined on behalf of the plaintiff in error, and subsequently recalled and made a witness for the defendants.

Mr. Harroun is a civil engineer, living at Albuquerque, N. M., and when testifying had been an employee of the United States Government about four years. Under the directions of the proper officer of the Geological Survey he established gauging stations at four different places in the Rio Grande within the limits of New Mexico, namely, at Embudo, White Rock, San Marcial, and El Paso. (Rec. 351.)

He had charge of these stations, and noted the measurements at each until May, 1897. (Rec. 357.) During the year 1897, from May, the measurements at El Paso were taken and recorded by W. W. Follett, another engineer in the service of the United States, as a member of the International Boundary Commission (Rec. 366), and during the same year Harroun made the measurements

at San Marcial. While the distance from San Marcial to El Paso, measured along the axis of the stream, is given at 175 miles, it is also in evidence, and not denied, that the distance along the sinuosities of the channel is 300 miles.

Now, the court has said, in finding 7, that, in passing from one of these stations to the other, the loss of water by seepage and evaporation, is about one-third of the entire volume. It seems that there could not be anything more definite and conclusive as to such loss than the comparison of the amount of water passing at San Marcial and the amount passing for the same time at El Paso. There are no tributaries to the river between those places. During the month of October, 1897, there was a considerable flood of water passing the station of San Marcial. The flood had started in September, so that on the first day of October the flow was at the rate of 800 cubic feet a second, or 800 second feet.

This October flood was measured at San Marcial by Mr. Harroun, during the time of its passing, and was similarly measured by Mr. Follett at El Paso. Each of these engineers made tables showing the actual quantity passing in the river at these points for every day during that month. These tables were made exhibits in the case, but by some oversight were not sent up with record. Yet the flow at each place for each day, as recorded, is fully set out in the testimony of Mr. Harroun, found on pp. 570 to 576. In the computations made by the engineers, as stated by the witness, and appearing at other points in the record, it is estimated that it took the water passing San Marcial about three days to reach El Paso. Mr. Harroun, therefore, in the testimony cited, compares the water passing at San Marcial with the water passing El Paso three days later. In this way the witness makes the comparison throughout the whole of the month.

Ocasionally he gives the flow at El Paso on the second day or the fourth day after the measurement at San Marcial, but, in addition, always gives it for the third day.

We have put the gist of this testimony into tabular form, taking the figures from the record, 570 to 576. This table shows all the water that passed the upper station in the thirty days from October 1 to October 30, inclusive; and, correspondingly, the water that passed El Paso from October 4 to November 2. The difference in the aggregates of these amounts will show the loss between the two points. It will be observed that the first reading at San Marcial is given for October 1, and the corresponding reading at El Paso for October 4, three days later. The table is made on this plan throughout. This results in giving all the water that passed San Marcial for the thirty days ending October 30th and all the water that passed El Paso for the thirty days ending November 2d. The only sources of losses between the two points are, first, by seepage—sinking into ground; second, by evaporation, and third, by being diverted into ditches *en route*. For the purposes of the trial, the loss by the ditches was conceded to be 1,000 cubic feet per day. When it is remembered that these particular measurements were made during the time of a flood, and that the floods always swept away any diverting dams at the mouths of the ditches, a fact well attested in the record, it will be conceded that 1,000 second feet for that kind of loss is a most generous estimate. There is usually no irrigation during the month of October. The law and the legal regulations require the gates of the main canals and those of the lateral ditches to be closed when the water is not being used to irrigate the ground. Evidently the concession that 1,000 feet were lost each day during the time mentioned was on the theory that all gates were wide open.

Now, the table which is given below shows that during

the 30 days of October the aggregate amount of water which passed San Marcial was 136,950 second feet, and the amount which passed El Paso for the corresponding days was 55,060 second feet. The loss was 81,890 second feet. This is a loss of over 59.5 per cent. of all the water passing the upper station. If we subtract 1,000 second feet for each of the 30 days as water absorbed by the ditches, even then the loss from seepage and evaporation would have been 51,890 second feet; showing a loss from this source of 37.89 per cent. instead of 33½ per cent. as estimated by the court.

TABLE.

Showing the amount of water passing San Marcial from October 1 to October 30, 1897, and the amount of water passing El Paso from October 4, to November 2, 1897, as determined by the U. S. Engineers taking the measurements at the Government gauging stations at the two places, respectively (Rec. 570 to 576):

At San Marcial. In sec. ft.		At San Marcial. In sec. ft.		At El Paso. In sec. ft.		At El Paso. In sec. ft.	
Oct. 1.	800	Oct. 18.	3500	Oct. 4.	350	Oct. 21.	1450
2.	800	19.	3400	5.	300	22.	1400
3.	650	20.	4300	6.	280	23.	1420
4.	5300	21.	4700	8.	480	24.	1500
6.	9100	22.	5100	9.	4000	25.	1460
7.	5700	23.	4700	10.	3600	26.	1400
8.	3900	24.	4300	11.	3400	27.	1380
9.	4500	25.	4300	12.	4500	28.	1460
10.	15500	26.	4300	13.	5000	29.	1410
11.	8100	27.	4300	14.	3500	30.	1400
12.	6100	28.	3900	15.	2400	31.	1350
13.	5100	29.	3900	16.	2000	Nov. 1.	1695
14.	4700	30.	4300	17.	1600	2.	1525
15.	4300			18.	1700		
16.	3900		136950	19.	1600		55060
17.	3500			20.	1500		

The loss being 59½ per cent. of the water passing San Marcial. Add to the water passing El Paso, 30,000 second feet for alleged loss by ditches, and we have 85,060 second feet. This amount is 62.11 per cent. of 136,950, showing a loss of 37.89 per cent.

These figures have an important bearing on the facts disclosed by the table found in Finding XXVIII, and will be referred to again in discussing that finding.

It is clear, therefore, that the loss of water by seepage and evaporation between San Marcial and El Paso during the month of October, 1897, was in excess of $33\frac{1}{2}$ per cent. The assignment of error admits that it was at least $33\frac{1}{2}$ per cent., by saying there was no such loss shown *except during that year*. But the capacity for absorption does not change from month to month or from year to year. The conditions of the earth between the two points were the same previous to 1897 as they were during that year. The voluminous record of testimony contains abundance of proof to the effect that the valley of the river along the 300 miles named has a large capacity for absorption. It is made up of gravel and quicksand, and the distance to bed rock is great. Senate Document 229, 55th Cong., 2d Sess., is in evidence, and shows, by the report of the engineers of the International Boundary Commission, that by actual borings the bed rock at El Paso is from 50 to 87 feet below the surface, Doc. 229, p. 45, and last map. And, in the amended bill of complaint, in the 5th subdivision, the complainant alleges that the Rio Grande "from the point of the said projected dam to the mouth of the Conchos river, throughout almost its entire course from the latter point to its mouth, flows through an exceedingly porous soil" (Rec. 40). This description covers the 300 miles named in Finding VII, except 40 miles measured along the axis of the stream, San Marcial being 40 miles above the point of the projected dam.

Clearly, therefore, the assignment of error to this finding can only relate to the weight of evidence in its support. But as to this, there is no evidence whatever contradicting,

or tending to contradict, the finding. Under the decisions of this court it must be considered as final.

FINDING VIII.

The court finds the character of the bed and banks of the stream below El Paso to be similar to those between San Marcial and El Paso "where such large losses in volume have been accurately determined, and for a distance of 400 miles below El Paso, Texas, measured by the sinuosities of the river, to Presidio del Norte (the mouth of the Conchos) such seepage and evaporation continue to diminish the volume of such water."

The plaintiff in error, in his second assignment, declares that this finding is erroneous, "there being no evidence upon which to base the general and particular conclusions contained therein."

In view of the declaration of the plaintiff in its amended bill of complaint, on which the case has been tried, we hardly feel called upon to suggest proofs as to the accuracy of this finding. In the 5th paragraph of plaintiff's bill it is alleged "that the Rio Grande receives no addition to its volume of water between the projected dam and the mouth of the Conchos river, about 300 miles below, and that the said Rio Grande, from the point of said projected dam to the mouth of the Conchos, throughout almost its entire course from the latter point to its mouth, flows through an exceedingly porous soil, and that the atmosphere of the section of the country through which said river flows, from the point above the dam to the Gulf of Mexico, is so dry that the evaporation proceeds with great rapidity, &c." (Rec. 40.)

But in addition to this declaration, by which the plaintiff should in all fairness be bound, we call attention to the following testimony.

Engineer Follett, while testifying as a witness for the Government, and describing the formation at San Marcial, says :

"It is very much as it is at El Paso. I don't think there is any rock bottom at all. I think it is a very shifting bottom." (Rec. 589.)

Allen Blacker, a witness for the defendants, who lived at El Paso for 28 years and was judge of the district court at that place from 1875 to 1881, testifies as follows :

"Q. Did you ever travel in the bed of the river, any public road there any of this time during the years that you have mentioned ?

"A. Yes, sir.

"Q. At what time did the public road lay in the bed of the river ?

"A. In 1875, '76, and, I think, in 1877.

"Q. Did the road lay right down in the channel of the stream where the water would have flowed if there had been water in the river, or around it—to one side ?

"A. It was right in the river, but there was no water.

"Q. There was no water ?

"A. No water.

"Q. Was generally used as a public road ?

"A. Yes, sir.

"Q. About how far from what place to what place did that condition extend ?

"A. From about five miles below El Paso to one or two miles of Ysleta, south of El Paso, and then north of El Paso from the smelter to the Duras Nita—about 6 or 8 miles.

"Q. Did you ever travel in the bed of the Rio Grande on a public road north of El Paso ?

"A. Yes, sir.

"Q. During that time ?

"A. Yes, sir.

Rec. 396-7.

William Kelly, a witness on the part of the plaintiff, in answer to a general inquiry as to the character of the bed of the river, replied :

"A shifting, sandy bed, full of shallows at low water." Rec. 160.

And on page 155 the witness testifies as follows :

"The bed of the Rio Grande in its navigable parts runs mostly through an alluvial soil, frequently changing its location, by freshets and sudden rises, from a hundred to two thousand yards. The banks are absorbent. The loss of such absorption has to be replaced by water coming down stream."

J. H. McMahan, a witness who went down the river in a row-boat from El Paso to the mouth of the Conchos, describes the character of the banks and adjacent country generally as level, with alluvial soil, gravel, and sand, and a few rocks occasionally. There is one cañon between these points where the hills come near to the stream, but aside from this, the witness gives the character of the river bed and banks as it has been described above and about El Paso. (Rec. 512, 513.)

In describing a certain stretch of 40 miles the witness says :

"Well, it was a good deal the same as the lower end of this valley below El Paso. Found a wide sandy country there for quite a ways, with cotton-wood trees setting on the banks of the river, and you could see out probably in places 15 miles from the river. The channel of the river was very wide, and the water spread out in lots of places where it had gone crossways on the main channel, between banks, I mean." (Rec. 514.)

In another place (Rec. 520) he describes the channel

of the river between El Paso and the Conchos as being "in every respect very wide."

All this goes to the character of the formation in the bed of the stream and along its banks below El Paso, as compared with its character above the latter point up to San Marcial. Certainly it is sufficient basis for that part of the finding which alleges that the general character of the bed and banks of the stream below El Paso is the same as that above. If the court is not to enter upon an examination of the weight of the testimony, then this is ample to sustain the finding in that regard. In any event, there is no evidence to the contrary.

The second part of Finding VIII declares that between El Paso and Presidio del Norte the seepage and evaporation continued to diminish the volume of the water. This is probably the "general and particular conclusion" which plaintiff in error declares to be erroneous.

The testimony and the tables set out in this record show that the spring and autumn floods in the river at El Paso during the year 1897 were among the greatest that had been known at that point for a number of years. For instance, Finding XIX, to which no exception has been made, and which was taken entirely from plaintiff's testimony, gives the acre feet which were said to have passed El Paso from 1889 (this date in the printed record is 1899, but is evidently an error) to 1899, a period of 8 years. The amount of water thus shown to have passed in 1897 was greatly in excess of that of any other year mentioned, except 1891. Several witnesses mention it as a great flood year at El Paso, and witnesses living further down the stream, at Laredo and other points, mention the fact that their localities were warned by telegrams and items in the papers of the high waters at El Paso.

R. C. Daly's testimony is found on page 497 and fol-

lowing pages. He was a teacher in the public schools at Presidio (the mouth of the Conchos), and had lived there 33 years. He was asked :

"Q. Now, did you during the year 1897 hear anything of a flood at El Paso ?

"A. Yes, sir.

"Q. How did you hear of it ?

"A. There were telegrams sent to El Paso to our people in May, saying that there was a great flood at El Paso, and for us to be on our guard against it.

"Q. Be on your guard ?

"A. Yes, sir.

"Q. You were then at Presidio ?

"A. Yes, sir.

"Q. Did that flood reach Presidio ?

"A. To a certain extent, but very small.

"Q. How great was it ?

"A. At our place we could always cross the river below the Conchos by foot, horseback, or carriage, except when the floods are. It took away our crossing—took away about 8 or 10 days.

"Q. That is, you mean you could not cross here, as you had been, for 8 or 10 days ?

"A. But that wasn't any great amount of water.

"Q. About how much water was it ?

"A. Well, I suppose it would get up, or that it would cover the bottom of a carriage.

"Q. Did all that water come from above the Conchos ?

"A. Yes, sir.

"Q. The Conchos was not flowing at that time ?

"A. The Conchos always flows.

"Q. Then this crossing was below the Conchos, or above ?

"A. Below.

"Q. Part of that water was coming from the Conchos—regular flow of water from the Conchos ?

"A. Yes, sir.

"Q. You mean to say the Conchos was not up at that time, but was just giving its usual flow ?

"A. Yes, sir.

"Q. And at the usual flow of the Conchos and the Rio Grande you could cross this river, and after this flood came down the river it would have come up to the bottom of a buggy, as I understand it?

"A. After the river (flood) had gone down, then it would be to the top of the carriage or ambulance; but after it had gone again, it might come up to the bottom, but not high after it went down." (Rec. 499.)

The witness McMahan, the old trapper, who went down the river in a skiff from El Paso to the mouth of the Conchos in 1893, testifies that he left El Paso on three feet of water, and when he got within 40 miles of the Presidio the "water was getting very scarce in the river, and it was getting a very difficult matter to travel." When asked about how much water there was at this point, he replied: "Comparatively none—that is, for my purposes—water getting so low at various places I had to drag my skiff off the sand." He was then asked what had become of the water, and said: "I don't know; it had disappeared." (Rec. 484.)

Here is direct and positive testimony to support the latter part of Finding VIII. But had this proof been wanting, the court would have been warranted in its conclusion by the proved losses between San Marcial and El Paso, and by the proven and admitted fact that the formation of the bed and banks below El Paso was altogether similar to that above.

H. K. Ware, a very intelligent witness, who, in 1899, explored the river from the mouth of the Conchos downward, as an employé of Prof. Hill of the Geological Survey, declares that the expedition left the Conchos on from eighteen to twenty-four inches of water in the channel, and each day found less water; that the second day

out they had to drag their boats over gravel bars where there wasn't over three or four inches of water; "the water had greatly disappeared; it decreased every day's travel until we got into the cañon where we got a second rise and carried us out." The cañon is eighty-one miles down from mouth of the Conchos. (Rec. 470.) He describes the character of the banks, etc., outside the cañons as sandy, shifting, alluvial soil. Finding VIII must stand.

FINDING IX.

"Between Elephant Butte, the point where defendants propose to divert the waters of such stream, and the Presidio del Norte, a distance of six hundred and forty miles by the sinuosities of the stream, there are no living tributaries to said Rio Grande, and the waters of such stream are not reinforced substantially between such points by any regular flow or tributary, and there is no perennial flow of the Rio Grande at Presidio del Norte."

We have already quoted the amended bill of complaint (Rec. 40), where the plaintiff declares that the river "receives no addition to its volume of water between the projected dam and the mouth of the Conchos river." The declaration in the first part of this finding is exactly to the same effect. Yet plaintiff in error declares in its third assignment of errors that "the court erred in its ninth finding of fact, there being no evidence on which to base the general and particular conclusions contained therein."

The 9th finding does not allege any conclusion whatever. It simply states two facts. First, that there are no living tributaries between Elephant Butte and Presidio del Norte, and second, that there is no perennial flow in the river at the latter place.

The first of these facts as declared in the bill of complaint, is proven by the report of Major Wm. Emory (Rec. 616), by the testimony of McMahan, and by other witnesses, and is nowhere denied except in this assignment of error. The second fact, that the flow of the river is not perennial at Presidio del Norte, is testified to by Daly (Rec. 500), who swears positively that at one time in 1897 there was no water in the river at that point.

H. K. Ware (Rec. 457) says that he and Prof. Hill, in September, 1899, wired to El Paso and to Fort Hancock, sixty miles below El Paso, to ascertain the condition of the river, and got answers back that there was no water at either point, and then they went on down to the mouth of the Conchos before they got enough water to "float a shingle," and that what water was then in the river channel at Presidio came from the Conchos; that "the reason we did not go in above the mouth of the Conchos was there was no water—couldn't take the boats down." (Rec. 457.)

If the river is dry a portion of each season at and about El Paso, it certainly is dry an equal number of times at Presidio del Norte. There are no tributaries between the two points. The record is full of proofs to the effect that the river bed is dry at El Paso more or less of the time each year. We have already quoted Judge Blacker, that during the years 1875, 1876, and, he thought, 1877, the highway was located, both above and below El Paso, in the dry bed of the river. (Rec. 396.) In an official report made by engineer Follett to the International Boundary Commission, he undertakes to give in chronological order such specific information as he had obtained concerning the river from 1851 to 1896. Many years are omitted, and in many of the years reported he has no information of the condition of the river at El Paso. In 1851 the

river was dry at Las Cruces, and in 1861 at Socorro down to and below El Paso. In 1879 he reports the river dry at El Paso, dry at San Marcial for six weeks, and dry at Las Cruces "from the end of July to the end of October"—twelve or thirteen weeks. In 1889, "at El Paso, river was dry from August 5 to the latter part of December, the longest time on record." In 1890, at El Paso, "summer flow large, shown by gaugings." But at Socorro, he notes, "thought to have been dry (?)." In 1891, reports summer flow very large at El Paso, but at Socorro above and Palomas below San Marcial, the river is noted as "thought to have been dry," and "dry a short time." In 1892, "at El Paso, gauge showed dry from early in August until fall." In 1893 the river "was probably dry in June, then a flood, and no record beyond that time." But at San Marcial that year, "river dry until September or October." In 1894, at El Paso, no gauge record; "river was dry in July." In 1895, Mr. Follett says there was no gauge record at El Paso that could be used, but the river was dry at Mesilla, a short distance above, for six weeks.

In 1896 his report shows the river dry at El Paso for some time in May and July and August and September, and dry at several points above.

This seems to be evidence which Mr. Follett gathered by making inquiries of residents along the river. Generally it is free from conflicts, and, as a whole, it is a corroboration of the finding that the Rio Grande is not a perennial stream at Presidio del Norte. The table covers 20 years. The condition at El Paso is given in nine of these. Of these nine years there were seven when the river was dry some portion of the year at El Paso. The two years out of the nine when his report shows "summer flow large at El Paso," the river is reported dry

at points above, between which and El Paso there were no tributaries.

W. M. Reed, a civil engineer of extensive experience, examined the river both above and below the Conchos early in December, 1899, and testifies that not a particle of water was then coming down the Rio Grande at that point. (Rec. 559.)

Thus the testimony clearly sustains the finding.

FINDING X.

In this the court found the Conchos a perennial stream, and torrential in season, and always carrying a considerable quantity of water. Also found that cross-sections of the Rio Grande taken just below and just above the mouth of the Conchos, at highest water-mark known, so far as disclosed by the evidence, in 33 years, shows the area of the lower cross-section to be at least 25 times as great as that of the upper cross-section, and its carrying capacity to be from 16 to 25 times as great.

The error assigned to this finding is as follows:

"The court erred in its 10th finding of fact, to the effect that the Rio Conchos is a perennial stream and at all times contributes a considerable quantity of water to the Rio Grande, such finding not being sustained by any evidence in the case, and the rest of the finding being a mere statement of a probative and not an ultimate fact."

Is the Conchos a perennial stream carrying considerable water? Major Emory, in his official report, has this to say:

"On the Mexican side the Rio Grande receives the waters of the Rio Conchos flowing from the southwest, and draining a large extent of country in the State of Chihuahua. This is the only constant tributary to the

Rio Grande yet met with in our course downward (he started at El Paso); its waters at the usual height are clear, flowing generally over a bed of limestone pebbles."

Mr. McMahan declares, on page 485 of the record, that the Conchos is a perennial or running stream.

R. C. Daly, the school teacher, who had resided at Presidio, opposite the mouth of the Conchos for thirty-three years, declared "the Conchos always flows." (Rec. 499.) He also stated that the water in the Rio Grande just below the Conchos, when there was the ordinary flow in the latter stream, was deep enough to come to the bottom of a carriage or ambulance. (Rec. 499-500.)

The cross-sections of the river referred to in the finding were made by W. M. Reed, a civil engineer, who had been in the employ of the Pecos Irrigation and Improvement Company for about ten years. This latter company established and owns the extensive and expensive irrigation works on the Pecos river in the vicinity of Eddy and Roswell. Mr. Reed was its chief engineer. The Pecos is the largest tributary to the Rio Grande from the American side. He testified that the cross-section above the Conchos measured to the high-water mark showed a surface area of 662.25 feet. (Rec. 559.) That a similar cross-section made below the Conchos to the high-water mark showed 19,556.7 feet. This latter section has more than twenty-nine times the area of the other. The court in the finding has put it "at least twenty-five times as great."

Reed's testimony was not contradicted by any other witness. Finding X finds abundant support in the record.

FINDING XI.

Here the court found from the evidence that the waters of the river only passed the mouth of the Conchos in any considerable quantities on one occasion—during May, 1897—and found that the evidence failed to show that these high waters of 1897 affected the height of the river at Laredo to any considerable extent.

The error alleged in this finding (assignment 5) is that “said conclusion being uncertain, ambiguous, and misleading, incomplete, and contrary to the evidence in the case, and is wholly immaterial, and because the particular facts found do not justify the general conclusion stated therein.”

Stripped of a portion of its redundant words, the objection seems to go to the weight of evidence upon which the facts are found. Should my translation of this somewhat occult assignment of error be correct, we should not be warranted, under the decisions of this court, in devoting any portion of my argument to it. But as its terms and meaning are somewhat “uncertain, ambiguous, misleading, and incomplete,” we pause, in an abundance of caution, to suggest that the evidence of the school teacher, R. C. Daly, whose intelligence and opportunities made him a most valuable witness (Rec. 497); the testimony of Dr. Thos. J. Turpin (Rec. 440), who was the quarantine officer at Laredo from 1887 to 1899, and crossed the river at that point at least twice every day during that time (Rec. 440), and the testimony of H. K. Ware, who went down the river in 1899 with Prof. Hill of the Geological Survey, each and all furnish plenty of basis for the facts set out in Finding XI.

FINDING XVII.

"The character of the formation in the basins or valleys of the Rio Grande at the only point where the same has been sounded to any great depth—that is, by the Boundary Commission at El Paso, Texas—shows the depth of sand and gravel to be at least 60 feet; and I can see no reason why the other valleys and basins along the course of the Rio Grande should not show the same formation to at least the same depth, the surface indications and appearance being substantially the same throughout its length."

The assignment of error (assignment 6) is as follows :

"The court erred in its 17th finding of fact; the same is not based upon any evidence in the case, and is misleading, ambiguous, and the mere expression of opinion. If the conclusion reached by said finding is based upon any evidence at all it is upon the absence of evidence, and while affirmative in form, it is negative in conclusion, and furnishes neither in whole nor in part any basis for the decree and finding dismissing the bill in said cause."

Now, Finding XVII announces two definite facts. First, that the soundings of the Boundary Commission at El Paso showed the depth of the sand and gravel to be at least sixty feet; second, that the surface indications and appearance of the other valleys and basins along the course of the river are substantially the same as at El Paso. From these two facts the learned judge draws the very obvious conclusion that the sand and gravel at other points are as deep as where the borings were made.

The charge that the facts thus found are not based on any evidence in the case is either made without care or made in desperation. We again refer to Sen. Doc. 229, containing Follett's report, which is part of the evidence

in this case. This report carries with it the report of the chief engineers of the Boundary Commission. On page 45 these engineers declare that the bed rock was found at El Paso at a depth exceeding 50 feet, and on one section of the borings they reached a maximum depth of 87 feet before striking the rock. These borings are graphically shown on a map forming Exhibit B of the report. This exhibit discloses the fact that the first boring went down 60 feet and failed to reach rock; the next three borings went down, respectively, 75 feet, 66 feet, and 56 feet, and all failed to reach bed rock. Rock was found in the fifth boring at 55 feet, and in the sixth at 75 feet. The eighth boring went 87 feet before striking rock, and the ninth to about 77 feet. The remarkable thing in these nine borings is that no clay was found. The formation is wholly sand and gravel—the sand largely prevailing. The power of this formation to absorb water must be enormous.

The second fact found is that the surface indications and appearance of the other valleys, &c., along the river, are the same as at El Paso. The record is full of testimony to this effect, and I only need to cite the statement of engineer Follett describing the physical characteristics of the river from Embudo, 65 miles south of the Colorado line, to points below Brownsville (Rec. 360, 361, 362, and 363); the statement of William Kelly, the present sole navigator of the Rio Grande, and the owner of the little stern-wheeler *Bessie* (Rec. 155); Robert Dalzell (Rec. 137); Albert Thomham (Rec. 222, *et seq.*); Jules Lacasse (Rec. 253). These are all witnesses on behalf of the complainant. Their testimony shows conclusively that outside of the cañons and a comparatively few rocky places, the whole length of the river in New Mexico and Texas flows through what is properly described in the bill of complaint as "an exceedingly porous soil."

The two facts being found, that the sand and gravel at El Paso is about 60 feet deep, and that the same formation adjoins and lies under the river in the other valleys, the conclusion that about the same depth of sand and gravel existed in these other valleys is obviously the correct one in the absence of any showing to the contrary. The conclusion of the court in this regard is also reinforced by the amount of water actually lost by seepage between El Paso and San Marcial on the north, and the similar amount that was apparently lost by the same means between El Paso and Presidio, and between Presidio and Laredo. Under the decisions of this court Finding XVII must be allowed to stand.

FINDING XXVIII.

We shall not, in this connection, repeat this finding in full. The assignment of errors treats it by paragraphs and we shall follow the objections in the order of their statement.

The court at the outset makes the following explanatory statement: "In attempting to arrive at a conclusion in this case, I have made some computations based partially upon known data and partially upon probabilities arising from the evidence. In such computation I have assumed the following conditions." The first paragraph reads as follows:

"1. It appears by comparison of the tables of measurements at the gauging stations of San Marcial and El Paso that there is no material flattening or tailing out of the floods in the Rio Grande. If this remains true throughout the entire course of the river, a body of water passing El Paso would reach Rio Grande City, if at all, in practically the same form as to length and height as at El Paso, less losses between those points."

The error charged to this paragraph is that it is based upon the measurement of one flood flow in the year 1897, and that only between San Marcial and El Paso, and, therefore, is not a reasonable deduction from the evidence in the case.

The very statement of this assignment of error is an *admission that the error, if there is one, is made in weighing the evidence.* There is no denial that the table of measurements kept at the two points mentioned during the year 1897 does show that the rise, and climax, and decline of the flood at San Marcial, were practically repeated at El Paso. That is, there was no flattening or tailing out of the flood between those two places as it went down that year. Now, the law which governs the flow of water is the same from year to year. Again, the conditions under which the water would pass from San Marcial to El Paso would not materially change from year to year. If the flood went down without flattening or tailing, in 1897, then it went down without flattening or tailing in 1891, and every other flood year.

The second paragraph of the finding is as follows :

"2. It seems probable from the conditions of the bed and banks of the stream, and the climate of the country through which it passes, that any flow of less than 2,000 second feet at El Paso, or 3,000 second feet at San Marcial, cannot possibly have any effect on the river at the head of navigation. It also seems probable that only such flows as are above this amount and are sustained for a considerable period could reach the head of navigation in substantial quantities."

As to this, plaintiff in error objects that it is not a finding of fact drawn from the evidence in the case, but is purely the result of speculation and not a fair deduction from the evidence.

During the October flood of 1897 there passed the gauging station at El Paso 5,060 second feet. This represented the rise, climax, and decline of the flood, and covered the actual measurements for thirty days. This gives an average flow of something less than 2,000 second feet for each day. The testimony discloses that the May flood and the October flood of that year were about of equal size, some of the witnesses stating that the October flood was the larger, while others made similar statements as to the spring flood. It may be properly assumed that they were of nearly equal proportions—the May flood probably carrying the greater amount of water. Now, the spring flood has been traced to the mouth of the Conchos river with more or less accuracy, and from the Conchos to Laredo. Allowing all that can possibly be claimed by the plaintiff in error as to whether or not the waters from the May flood reached Rio Grande City, it certainly cannot be claimed and will not be claimed that they reached that point in any considerable quantity. The weight of the testimony is to the effect that the flood was well spent when it reached the Conchos, and produced no apparent rise of the stream at Laredo.

The Court therefore is entirely justified in stating from the evidence that 2,000 second feet at least would be necessary at El Paso to have *any* effect on the river at the head of navigation. The finding is not purely the result of speculation, but is a fair deduction from the evidence, made most favorably to the contention of the plaintiff.

The 3d paragraph in this finding reads as follows :

"3. It seems probable that loss by seepage and evaporation will be as great between El Paso and Presidio del Norte as between San Marcial and El Paso; the loss may be greater owing to the greater distance."

The plaintiff declares that this is also erroneous, because it is not drawn from the evidence in the case, but is purely the result of speculation and not a fair deduction from the evidence.

We have already shown that the formation of the soil through which the river passes between El Paso and the Presidio is similar to the formation between El Paso and San Marcial. It is also in evidence, without challenge, that the distance from El Paso to the Presidio, estimated along the sinuosities of the stream, is 400 miles, and the distance between El Paso and San Marcial, similarly estimated, is 300 miles. With these facts in hand, is not the conclusion drawn by the court even something more than "probable?" The statement in the paragraph is a most conservative one in view of the proven facts. Undoubtedly the loss by seepage and evaporation between El Paso and Presidio will be considerably greater every time than the loss between El Paso and San Marcial.

The fourth paragraph is as follows:

"4. From Presidio to Rio Grande City, flood waters from the El Paso would encounter in the bed the perennial waters known to exist there. To what extent they furnish a water table for these flood waters to travel upon is unknown, but I have assumed it in this computation that losses by seepage and evaporation are thereby lessened, and have taken an arbitrary twenty per cent. as representing the probable loss from such causes."

Plaintiff in error declares that the court is not justified in thus assuming an arbitrary loss by evaporation and seepage between Presidio and Rio Grande City, but says such assumption must be based on the evidence, and that there is no evidence in the case from which such arbitrary percentage of loss can be determined.

Here are the elements from which this paragraph of Finding XXVIII is built up ; they are all found in the testimony in this record :

1. The perennial flow of the Rio Grande river begins at Presidio—the water coming from the Conchos. There are several large perennial streams emptying into the river below Presidio and before it reaches the head of so-called navigation at Rio Grande City. The most important of these is probably the Pecos. Hence, any flood waters of the main stream passing Presidio would encounter a certain amount of perennial water furnished at that point and below, as declared in the first sentence of the paragraph under consideration.

2. To some extent at least these would furnish a water table for the flood waters and tend to lessen seepage. This would go without saying.

3. From Presidio (the mouth of the Conchos) to Rio Grande City is 900 miles measured along the sinuosities of the stream.

4. Fourth, the formation along the river over this 900 miles is practically the same (except for the comparatively small distances where it runs through cañons), as the formation above, where the loss by seepage and evaporation equals one-third of the whole volume in a distance of 300 miles.

Now, assuming these four facts to be established by the testimony, as we believe they are, the estimated loss of twenty per cent. while the water traversed the 900 miles in question, is certainly a very conservative one, far inside of what was warranted, and is as truly bottomed on the evidence in the case as any deducible fact can be.

Paragraph 5 of the finding reads as follows:

"5. It seems probable that a flood passing El Paso would reach Rio Grande City, if at all, in from 15 to 25 days,

assuming the river to have comparatively a uniform fall between those points."

To this paragraph the plaintiff does not assign error separately, but contents himself by saying that paragraphs from 1 to 6 "are not based upon or sustained by any evidence in the case."

The court in the paragraph just given states the probable time for the water to pass from El Paso to Rio Grande City at from 15 to 25 days. But plaintiff says there is no evidence to sustain this. James J. Haynes, a witness on the part of the Government, testified that it took three weeks for a flood to pass from El Paso to Laredo. (Rec. 238.) Add four days for the time between Laredo and Rio Grande City and we have exactly the maximum time stated by the court. The time given by the experts for the water to pass from San Marcial to El Paso, a distance of 300 miles, was from 3 to 4 days; taking the longer time as the basis, and computing the distance from El Paso to Rio Grande City at 1,300 miles, it would give us about 17 days for the water to pass between these two points. Hence, the probable time stated in the fifth paragraph finds warrant in the record.

The sixth paragraph reads as follows:

"6. It appears from the evidence that a rise of two feet above low water between Rio Grande City and Brownsville is necessary to make navigation practicable, and these waters usually flowing down to that point, if at all, at a season when other supplies are low, I assume a rise of two feet to be necessary to be of any substantial benefit to navigation."

To this paragraph also the plaintiff charges that it is not sustained by any evidence in the case.

1. The *Bessie* is the only boat doing business on the

river. It draws about two feet of water. 2. The whole of the navigation by this little boat, which includes all the navigation, is between Rio Grande City, the head of navigation, and Brownsville, a distance of 177 miles by the sinuosities of the stream, and 95 miles along the axis. 3. Immediately preceding floods coming down the river from points above Rio Grande City, the *Bessie* is unable to make trips owing to low water.

These three facts are attested by practically every witness for both the plaintiff and defendant, who was qualified to testify as to conditions at and below Rio Grande City. This being true, the court is thoroughly authorized to declare that, *from the evidence*, a rise of two feet above low water between Rio Grande City and Brownsville is necessary to make navigation practicable.

The seventh paragraph of the finding sets out a table based upon the facts found in the six preceding paragraphs. In this table the court gives the actual number of acre feet supposed to have passed El Paso during the flood times of the years 1890, 1891, 1892, 1893, 1894, 1895, 1896, 1897, and 1898. There was no record kept at El Paso during part of 1893, and the whole of 1894-'95, and '96. The court either assumes the amount for those years, or deduces it approximately from the record kept at San Marcial. He then computes the rise of water at Rio Grande City for each of the flood times mentioned on the basis of a loss of $3\frac{1}{2}$ per cent. by seepage and otherwise between El Paso and Presidio, and 20 per cent. loss between Presidio and Rio Grande City. The column denoting the rise of the water at Rio Grande City for the times given, and upon these bases of computation, shows that out of the nine years mentioned, there were only four years when the water was raised two feet or more. These rises occurred during the years 1890, 2 feet; 1891, 3 feet; 1892, 2.2 feet, and 1897, 2.6 feet.

In another column the court gives the rise during the same periods calculated on the basis of a loss of 45 per cent. between El Paso and Presidio. This calculation discloses that there were only two years out of the nine years when the water was raised two feet or more. The figures for 1891 are 2.5 feet, and for 1897, 2.1 feet.

By recurring to the table of measurements which we have given in our consideration of Finding VII, it will be observed that the total amount of water which passed San Marcial during the October flood of 1897 was 136,950 second feet; the amount which similarly passed El Paso was 55,060 second feet. To this latter number should be added 30,000 second feet, which is assumed in the evidence as the amount of water taken up in the ditches between San Marcial and El Paso. This would make the amount which should otherwise have reached El Paso 85,060 second feet. This shows an actual loss by seepage and evaporation between the two points of 37.89 per cent. instead of 33½ per cent.

Now, applying this correct percentage of loss to the table under consideration, and continuing the supposed percentage of loss (20 per cent.) between Presidio and Rio Grande City, and we have as a result that the first column would only show a rise at Rio Grande City of 2 feet during one year of the nine years given, viz., the year 1891. It would further disclose that under the conditions assumed in the second column there would not be a rise equal to 2 feet during any one of the said nine years. The nearest approach to it would be in the year 1891, when, according to this computation, the water would have been raised at Rio Grande City 1.63 feet.

We have thus, from the actual figures given in the testimony, simply corrected the percentage found by the court, and applied the new percentage thus found to the

table. An error in mathematics may always be corrected by the appellate court.

Let us now recur to the table as it stands in the record. It is based upon the findings indicated in the six preceding paragraphs. These findings we have shown to be thoroughly well bottomed on the evidence in the case. Assuming, then, for the purposes of the argument, that the table as it stands is correct, it only purports to give the rise of water at Rio Grande City occasioned by the floods passing El Paso. Supposing, now, that there should be a temporary rise from low water at Rio Grande City to the extent of two feet or even three feet, it is perfectly clear that it would not materially aid navigation between that point and Brownsville. The distance is 177 miles, the river is very tortuous, the valley wide and constituted wholly of sand and gravel, the water in flood time constantly changing the channel and spreading out on either side to a great distance. A boat which drew 18 inches or 2 feet would, of course, draw more when loaded. One cannot read the testimony of Albert Thornham, who is the stepson of Mr. Kelly, the owner of the *Bessie*, and who actually ran the little boat for several years, beginning in 1884, without realizing very vividly the difficulties of running her at all, even under the most favorable circumstances. He says she was a stern-wheeler, drew, when light, about 20 inches of water, and when loaded $3\frac{1}{2}$ feet. He describes the river along the alleged navigable portion as being frequently intercepted with sand bars which constantly changed their positions in time of flood. Also states that the channel was constantly changing places, sometimes shifting 2 or 3 miles between the times of the boat going up the river and coming down. Speaking of sand bars, he said: "I have started out and had to pull the boat across a sand bar

about 2 or 3 miles above town (Brownsville)." Rec. 216, 222, *et seq.* On page 227 of the record this witness admits that at one time during the flood year of 1897 it took the *Bessie* about 30 days to make her trip up the river.

Here we call attention to the fact that the court, in the balance of this finding following the table, shows that his assumptions and computations embodied in it are so made as to give the *highest possible rise* of water at Rio Grande City from any possible flood passing El Paso. He states that he has not taken into consideration any variations in the height of the floods at El Paso and declares that if he had done so the beneficial effect on navigability would be lessened. This is perfectly clear. A longitudinal section taken of flood water at any point would show the upper line as a curve. The flood begins at low water and gradually rises to a climax and gradually declines. It is in the nature of a progressing wave. The rounded formation of the flood thus made continues during its whole course down the river. While the aggregate of this water, if flattened out, might aid navigation for a considerable number of days, yet, in passing down in the rounded form, it might not be of any aid whatever; the smaller amount of water at the front and rear of the flood or wave, might be insufficient, while the greater depth at the climax might be so great as to entirely stop navigation. It is in evidence that when the flood was very great boats could not run.

The court also calls attention to the fact that the testimony of Daly and Dr. Turpin shows that the waters passing El Paso during the flood year of 1897, could not make, and did not make, any appreciable change in the river at Laredo, 142 miles above Rio Grande City; also to the testimony of Kelly to the effect that there had been no floods from the upper Rio Grande in recent years.

Mr. Kelly is the owner of the *Bessie*, and the only boat owner that has attempted any navigation on the river for many years. He was testifying concerning the alleged navigable portion of the stream—his deposition being taken in 1899, just before the last trial. He said: "The present condition of the water in the Rio Grande has continued without material changes for three years." (Rec. 160.) This time would cover the large spring and autumn floods of 1897. He also stated, "My observation is that the flood waters of the Rio Grande have contributed to the navigation of the stream *up to three or four years ago.*" (Rec. 166.)

All this goes strongly to show that the computations found in Finding XXVIII, are much more favorable to the contentions of the plaintiff than they might have been made, and still kept well within the testimony. It will not do to charge that there is no evidence to sustain this finding, but, on the contrary, the actual losses between San Marcial and El Paso, and the testimony of the three witnesses mentioned in the finding, together with other testimony in the case, would have more than warranted a table showing that not a drop of the water passing Elephant Butte ever reached the head of navigation.

FINDING XXX.

In this the court found, as the ultimate fact, that the proposed acts of the defendants would not substantially diminish the navigable capacity of the Rio Grande within the present limits of navigability, and upon this final finding ordered a decree dismissing the bill.

The assignment of error in connection with this finding, declares that it is based upon statements of fact not sustained by the evidence, and that the statement of facts

contained in this finding does not justify the court in its finding of the ultimate fact that the proposed acts of the defendants will not substantially diminish the navigable capacity of the river where it is now navigable.

The Supreme Court of the Territory, after declaring that they had examined the voluminous record, which showed that the District Court had thoroughly gone into the whole matter, unanimously concluded that the facts as set forth in the findings of the learned judge below were sustained by the evidence, and the court adopted them as their own. (Rec. 648.)

Then, in commenting on the assignment of error to Finding XXX, the court says: "It seems clear to this court that the appellant utterly failed to establish the fact that the proposed acts of the defendants would have the alleged effect upon the Rio Grande." * * * "The burden of proof was upon the appellant. This was met by the appellant by showing that certain given quantities of water passed El Paso at certain periods specified, the natural presumption and result of which would be that it continued on down the course of the channel of the river. But this proof was met by the appellees by showing that the bed of the Rio Grande is of a porous character and capable of absorbing immense quantities of water; also, that immense quantities of water are lost by evaporation. This state of facts being made to appear, the appellant in this case was again compelled to assume the burden of showing that after these losses had taken place between El Paso and the head of navigation, there still remained a given quantity of water which would effect certain results at the point of navigability. In this the appellant failed. In fact, so far as disclosed by this record, such evidence is not in existence, there having been at the time of the trial of this case no gauging stations or other means

adequate to measure the flow of the stream occasioned by waters passing El Paso." Hence, the Supreme Court concluded that the ultimate fact set out in Finding XXX was properly found.

Even if the 22 preceding findings to which no specific errors were assigned, are well established, then the ultimate fact set out in Finding XXX is correct. But if the whole 29 preceding findings are permitted to stand, then the ultimate finding is too obvious for argument.

OTHER ERRORS CHARGED.

The only other errors charged which warrant attention here are those relating to a refusal of the court to grant a rehearing, and its refusal to make findings of fact to the effect "that since the commencement and use of water for irrigation in the State of Colorado, the evidence in the case shows a steady decline in the navigable capacity of the Rio Grande from Rio Grande City to Brownsville, so that now the said river for a considerable portion of the year is not susceptible of navigation, and is almost at all times attended with much difficulty;" and that such use of the water in Colorado had reduced the flow at El Paso 200,000 acre feet per year. (Rec. 110.)

"The application for a rehearing" (to use the language of the Territorial Supreme Court) "is based upon two propositions: 1st. The discovery of new evidence between the time of the final submission of the cause to the court and the entry of the decree, and 2d, an undertaking on the part of the Government to establish gauging stations along the Rio Grande below El Paso, for the purpose of accurately measuring the flow of that stream, so as to furnish reliable evidence not furnished upon the trial.

"The first proposition is supported by the affidavit of one Frank P. Clark, a resident of the city of El Paso,

State of Texas, the affiant stating that in the spring of 1881 he, together with other persons, constructed in the city of El Paso a large row-boat, 20 feet long and 6 feet wide; that they placed therein supplies for a prospecting trip, and that Clark and his companions, three in number, embarked in said boat at or near the ferry across the Rio Grande, between El Paso and Paso del Norte, Mexico; that the Rio Grande was not then at high flood stage, but was flowing a good volume of water, ample for their purposes; that they made very quick time, and at the close of the fifth day, May 9, 1881, the party passed the mouth of the Conchos river; that the boat came the whole journey safely, having at all times on the way an ample supply of water, and that in the last stages the volume of water in the stream appeared to be even larger or deeper than when they left El Paso, Texas.

"No evidence or proposed evidence is submitted as to the flow of the river at El Paso subsequent to the departure of this party down the stream, whether the same remained stationary in height as it was upon their departure, whether there was a pronounced rise or fall therein. Consequently this proof, if submitted, could have no effect on the judgment in this case.

"As to the second proposition submitted in support of the application for a rehearing, it is a proposal not to produce evidence which already exists, but to create evidence not existing at the time of the trial or of the application. We think no sufficient diligence has been shown by the Government in this case in regard to this evidence. From the time of the issuing of the mandate by the Supreme Court of the United States remanding this cause for this investigation the Government took no steps whatever to furnish this evidence.

"It is not shown in the application why no such steps had been taken. Even during the trial of this case it must have been as much apparent to counsel for the Government that this testimony was required to support the bill as it was after the findings of fact came from the trial judge. No mention of the same was made nor any application presented to the court at that time. Again, it is

not shown by this application that the result of any such proposed investigation will change the conclusion reached in this case. The Government simply asks that this case be reopened for the purpose of permitting it to make an experiment which it should have made before that time, and the result of which no one undertakes to foretell.

"We know of no rule, taking into account even the great public importance of this case, which would authorize this court, or the court below, to reopen the case under such circumstances. See *Rogers v. Marshall*, 3 Fed. 59; *Munson v. Mayor*, 11 Fed. 72; *Burrows v. Ween*, 26 Alt. 890; *Brac. Mod. Eg. Prac.* 837; *Pittsburg, etc., Co. v. Cowles*, etc., Co., 64 Fed. 125. *Burrows v. Ween*, *supra*, was a case trial by the chancellor, as this was, and a similar application was made and denied."

There is no occasion to enlarge upon this statement of the matter by the Supreme Court of the Territory. It most effectually disposes of the proposition relating to a rehearing.

In the matter of the refusal of the court to make findings as to the effect of the use of the water of the river in Colorado, we only have to say that that question was not embraced by the mandate; that there was no sufficient evidence relating to the matter on which to base any finding, and that such finding, however made, would have no relation whatever to the ultimate fact which the mandate called for. To have made any finding touching the use of water in Colorado would have been a vain thing. There is, however a significant suggestion in the request that bears upon the question of the present navigable capacity of the river where it is now alleged to be navigable. The court is asked by the plaintiff to find that now the river between Rio Grande City and Brownsville "for a considerable portion of the year is not susceptible of navigation, and is almost at all times attended

with much difficulty." In other words, there is but precious little navigation down there to be preserved. Who should know better than the plaintiff?

The findings of fact, being either admitted or found to be sustained by the evidence, the question arises whether or not they are sufficient to sustain the decree of the district court. Omitting problematical statements, and computations from only possible or probable data, these findings will be found to contain the following substantive facts:

1. The Rio Grande river is only *navigable*, if at all, from Rio Grande City to its mouth, a distance of 262 miles. (Finding I.)
2. The river is only *navigated*, if at all, from Rio Grande City to Brownsville, a distance of 177 miles by the sinuosities of the stream. (Finding I.)
3. Such navigation as has been carried on since 1888 has been of little or no benefit to commerce. During the past 13 or 14 years it has been conducted in one small boat, drawing from 18 to 24 inches of water, which has only be able to make occasional, irregular, uncertain, and spasmodic trips. (Finding II.)
4. Such so-called navigation as now exists depends, and probably has always depended, upon the water gathered from the water-shed tributary to the stream below the proposed site of the dam. The area of this shed is 170,000 square miles, while the area of the water-shed above the proposed site of the dam is only 25,000 square miles. (Finding XVIII.)
5. Over this vast water-shed below Elephant Butte there has existed from the year 1887 (14 years) a drought which has dried up many tributaries of that part of the stream, which tributaries, from 10 to 18 years ago, were bold running streams. (Finding IV.)

6. The Rio Grande through New Mexico, and as far south as Presidio del Norte, Texas, is a torrential and not a perennial stream. (Finding VI.) That its character as a torrential stream includes the river as low down as Presidio del Norte. (See Findings VII, VIII, IX, and X.)

7. No water reaching the dam site, unless it should be the highest flood waters, could possibly reach Rio Grande City in quantity. (Finding XI.)

8. The flood of May, 1897, was one of the highest ever recorded at El Paso. (Finding XIX.) Yet that flood only raised the water at Presidio about three feet, and did not materially affect the height at Laredo, 142 miles above Rio Grande City. (Finding XI.)

9. From San Marcial to El Paso, by the sinuosities of the stream, is 300 miles (Finding VII); from El Paso to Presidio del Norte (mouth of Conchos) is 400 miles (Finding VIII); from Elephant Butte to Presidio, 640 miles (Finding IX), and from Presidio to Rio Grande City, over 900 miles (Finding XVI). Therefore, by the sinuosities of the stream, from Elephant Butte, site of the proposed dam, to the alleged head of navigation, the distance is over 1,540 miles.

10. The first perennial tributary below Elephant Butte is the Conchos, 640 miles away. (Finding X.)

11. The river just below the mouth of the Conchos, as disclosed by actual cross-sections showing the high-water marks, has a carrying capacity from sixteen to twenty-five times as great as it has just above the mouth. (Finding X.)

12. The waters which pass San Marcial are diminished, by absorption and evaporation, one-third before reaching El Paso, a distance of 300 miles; "and at various other points in New Mexico such losses, more or less equal in percentage, are also shown to occur." (Finding VII.)

13. A party in a common row-boat left El Paso in the winter of 1893-1894, on water from three to three and a half feet deep, reaching the mouth of the Conchos in twenty-one days, with a scarcity of water for the last forty miles. (Finding XII.)

14. The bed of the stream between the mouth of the Conchos and Rio Grande City, over 900 miles, appears to be practically a succession of basins or valleys of greater or less extent, and of the same character, and affording the same facilities for absorbing the water, as the valleys above El Paso, or those above the mouth of the Conchos, and large amounts of water flowing between the Conchos and Rio Grande City are lost by evaporation and seepage. (Finding XVI.)

15. "The character of the formation in the basins or valleys of the Rio Grande at the only point where the same has been sounded to any great depth—that is, by the Boundary Commission at El Paso, Texas—shows the depth of sand and gravel to be at least sixty feet, and I can see no reason why the other valleys and basins along the course of the Rio Grande should not show the same formation to at least the same depth, the surface indications and appearance being substantially the same throughout its length." (Finding XVII.)

16. The source of the supply of the water flowing past Rio Grande City at the head of navigation is largely from the comparatively enormous water-shed of 170,000 square miles below Elephant Butte, feeding with tropical rains the Conchos and San Juan, particularly, which tributaries rise far south in the mountains of Mexico, and also affording a supply for the Pecos, Devil's River, the Good Enough, and other perennial streams, as well as the decreased but still flowing waters of the San Felipe and Salado, and at times filling with floods the now dry beds

of the former perennial streams, namely, Elm Creek, Los Moras, Piedras Pintas, Sycamore, Escondido, San Diego, Las Bacas, Trientauno, Santa Carlo, and Cienegas, as well as many smaller streams not named. (Findings XVIII and IV.)

17. "There is no direct testimony in this case showing that any given quantity of water in the Rio Grande passing El Paso reaches Rio Grande City, the head of navigation, and there accomplishes any certain effect upon the navigability of the stream." (Finding XXIX.)

Upon the above facts there can only be predicated one conclusion, the conclusion reached by the court in Finding XXX, viz., that the intended acts of the defendants in the construction of a dam or dams, or reservoir, and in appropriating the waters of the Rio Grande, will not substantially diminish the navigability of that stream within the limits of the present navigability.

If the court should disregard every other finding except Finding XXIX, which we have just quoted, it would find sufficient for the decree. It was incumbent on the plaintiff to prove its case. The trial court says there is no direct testimony showing that any given quantity of water passing El Paso ever reaches the navigable portion of the stream and accomplishes any certain effect upon the navigability. This being true, and it is not denied, it is much more true touching the water passing the site of the proposed dam—300 miles further up the stream. It wont do for plaintiff to say, "I have shown that a certain quantity of water passed the gauging station at El Paso; water runs down stream; therefore it ran to the head of navigation and substantially contributed to the navigability of the waters where they are now navigable." First, there is great uncertainty as to the quantity of water that ever passed El Paso during any one

season or year. Second, none of the water so passing El Paso has been traced to Rio Grande City. Third, there is no definite evidence showing what effect any given quantity of water at El Paso would have on navigability at Rio Grande City if it reached that point wholly undiminished.

How, then, can it be said that a dam which professedly and admittedly would only impound the storm waters at Elephant Butte, 300 miles north of El Paso, would substantially interfere with navigability more than 1,500 miles below? The 29th finding should settle the case.

This suit was commenced four years ago last May. The gravamen of the complaint was that defendant's proposed dam would seriously injure the navigable capacity of the river throughout its entire course. The complainant had unlimited resources at its command and was represented by the Department of Justice. The task set before it was an obvious and simple one from the start; and it was made so clear by this court at the time of its decision two years ago last May, that he who runs could readily read. But after all this lapse of time, after a delay that has been ruinous to the private interests involved, the trial court is compelled to say there is no direct testimony showing what has become of the water passing El Paso from year to year. The plaintiff responds in his assignment of error (No. 11) that "the court erred in refusing to reopen the case upon the application of the plaintiff, and to permit the plaintiff to obtain additional evidence to establish facts which the court itself found not to have been established, and without which no proper determination of the issues could be had, and the absence of such evidence and the possibility of procuring the same not having been apparent until the trial of the case."

IS ANY PORTION OF THE RIVER NAVIGABLE?

Looking to the proofs and admissions in this record, it now becomes a serious question whether the Rio Grande river, in any portion of its length, is a navigable stream within the definitions of this court. In the case of *The Daniel Ball* 77 U. S. 557, L. ed. 19, 1001), it is made clear that a river to be navigable, must be shown to be used, or susceptible of being used, *in its ordinary condition*, as a highway for commerce, over which trade and travel are or may be conducted in the customary modes of trade and travel on water.

The facts in this case must be "pieced out" with the imagination, before the Rio Grande can be found a river which "in its ordinary condition" can be used for trade and travel "in the customary modes of trade and travel on water." The plaintiff asked the court to find that the river "for a considerable portion of the year is not susceptible of navigation," and that such navigation as it is susceptible of "is almost at all times attended with much difficulty." (Rec. 110.)

Now, that is a square traverse of the proposition that in its ordinary condition it is a highway for commerce and travel, as trade and travel are usually conducted on water. For a considerable portion of the year "it is not susceptible of navigation." How, then, can it be said to be navigable "in its ordinary condition?" The balance of the year such navigation as is said to exist "is almost at all times attended with much difficulty." How, then, can it be said that there is any navigation possible which is or can be "conducted in the customary modes of trade and travel on water?" The *ordinary* condition of the stream, where alleged to be navigable, does not permit of navigation, and certainly when it takes the little *Bessie*

30 days to go from Brownsville to Rio Grande City, and has to be constantly dragged over sand bars by the captain, or cut her way through them by backing up stream and making a channel with the paddles of her stern wheel, there is no "customary trade and travel on water."

IRRIGATION AND NAVIGATION.

When the city of Chicago put piers into the Chicago river and bridges over it with draws only to be opened at certain limited times, this court discussed the relative value to the public of having unobstructed passage across the bridges, and having unobstructed navigation on the river, and announced that "the object of wise legislation is to give facilities to both, with the least obstruction to either."

Escanaba Trans. Co. v. Chicago, 107 U. S. 678, L. ed. 27, 442.

In *Gilman v. Philadelphia* (70 U. S. 713, L. ed. 18, 96), a similar view was taken, the court declaring that it should not be forgotten that the commerce which passes over a bridge may be much greater than that conducted on the river. The river in that case at the point where the bridge was constructed was admitted to be navigable. The court simply considered and found a way to protect the greater interest.

In the case at bar the irrigation interest which is endangered, is worth infinitely more than any possible navigation of the river. The average product per acre of irrigated land is estimated to be worth \$12.80. At this rate one crop on a single section would be worth \$8,192.00. This is probably greater than the value of the trade and travel by the *Bessie* for the three years following the com-

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mencement of this suit. This suit was begun 4 years ago last May. Had it not been instituted, at least 250,000 acres of arid lands now worthless would be under cultivation, producing annual crops worth more than two millions of dollars.

To decide this case upon the facts as found, and affirm the decree below, would not endanger any interest the public have in the navigable waters of the United States, neither would it endanger in the slightest the power of this court to protect such interests.

J. H. McGOWAN,
Attorney for Appellee.